

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings of claims in the application.

Listing of Claims:

1. (Currently Amended) A method of semantically classifying an image, the method comprising:

~~obtaining an image and sub-dividing such image into multiple~~ forming a group of hierarchical layered blocks ~~from the image, the blocks each block~~ within a layer the group being ~~at least~~ only partially coextensive with the other blocks of the group;

determining a posterior estimate of class membership of a the group of hierarchical layered blocks, the estimate being based upon class likelihoods of the hierarchical layered blocks in the group, such likelihood being conditioned on data extracted from hierarchical layered blocks in the group;

semantically classifying a portion of such image based upon the posterior estimate of class membership conditioned on the data extracted from the group of hierarchical layered blocks local to such portion.

2. (Original) A method as recited in claim 1, wherein the determining comprises:
determining an estimated class likelihood of each block in the group of hierarchical layered blocks;

combining the estimated class likelihoods of hierarchical layered blocks in the group into a posterior estimate of semantic class membership.

3. (Cancel)

4. (Cancel)

5. (Original) A method as recited in claim 1, wherein the determining comprises extracting low-level features from blocks.
6. (Original) A method as recited in claim 5, wherein the low-level features comprise color and textures.
7. (Original) A method as recited in claim 6, wherein the extracting extracts color low-level features by an Ohta decomposition.
8. (Original) A method as recited in claim 6, wherein the extracting extracts texture low-level features by a complex wavelet transform.
9. (Original) A method as recited in claim 1, wherein the class likelihoods are estimated in one-dimensional space.
10. (Original) A method as recited in claim 1, wherein a classification that results from the semantically classifying step is binary.
11. (Original) A method as recited in claim 1, wherein a classification that results from the semantically classifying step is selected from a group consisting of these binary sets:
sky or not-sky;
grass or not-grass;
natural or man-made;
inside or outside;
hair or not-hair;
face or not-face.
12. (Original) An image retrieval method comprising:
a semantic image classification method as recited in claim 1;
searching for images matching a given query in an image library containing images having portions thereof classified using the semantic image classification method.

13. (Original) A computer-readable medium having computer-executable instructions that, when executed by a computer, performs the method as recited in claim 1.

14. (Currently Amended) A semantic image classification system, comprising:
a block analyzer configured to extract low-level features of blocks of an image and estimate class likelihoods for each block, a class being a discriminating semantic classification and a block being a portion of the image;

a combiner configured to generate a posterior estimate of class membership based on combining estimated class likelihoods of hierarchical sets of blocks, a hierarchical set of blocks being a hierarchical organized and associated blocks that are, ~~at least,~~ only partially coextensive with one another;

an image classifier configured to determine and classify one of multiple discriminating semantic classifications to localized portions of the image based upon the posterior estimate of class membership of blocks comprising such portions.

15. (Original) A system as recited in claim 14 further comprising a hierarchy definer configured to subdivide the image into multiple hierarchical sets of blocks, each successively lower layer of a hierarchical set of blocks comprising one or more blocks which are smaller than and at least partially coextensive with one or more blocks in a layer immediately above.

16. (Original) A system as recited in claim 14, wherein the low-level features comprise color and textures.

17. (Original) A system as recited in claim 16, wherein the block analyzer extracts color low-level features by an Ohta decomposition.

18. (Original) A system as recited in claim 16, wherein the block analyzer extracts texture low-level features by a complex wavelet transform.

19. (Original) A system as recited in claim 14, wherein the class likelihoods are estimated in one-dimensional space.

20. (Original) A system as recited in claim 14, wherein the discriminating semantic classifications are selected from a group consisting of these binary sets:

sky or not-sky;
grass or not-grass;
natural or man-made;
inside or outside;
hair or not-hair;
face or not-face.

21. (Original) An image retrieval system comprising:
a semantic image classification system as recited in claim 14;
a semantic image querier configured to search for images matching a given query in an image library containing images having portions thereof classified using the semantic image classification system.

22. (Original) A computer-readable medium having stored thereon a data structure, comprising an image library containing images having portions thereof classified using a semantic image classification system as recited in claim 14.

23. (Canceled)

24. (Canceled)

25. (New) A method of semantically classifying a portion of an image, the method comprising:

examining a first block of the image to determine a class likelihood of the first block, the first block comprising a region of the image that is smaller in size than the entire image;

examining a second block of the image to determine a class likelihood of the second block, the second block comprising a region of the image that is smaller in size than the first block; and

semantically classifying the portion of the image based on a combination of the determined class likelihoods of the first block and the second block.

26. (New) A method as recited in claim 25, wherein the first and second blocks are centered on a common point in the image.

27. (New) A method as recited in claim 25, wherein the first and second blocks are not centered on a common point in the image.

28. (New) A method comprising:

forming a plurality of layers from an image, each layer comprising a plurality of blocks of the image, each block in a layer comprising a non-identical region of the image than the other blocks in the layer; and

determining a class likelihood for a block from each layer of the image; and

semantically classifying a portion of the image based upon a combination of the determined class likelihoods.